CLAIMS

1. An improved aqueous cathodic electrocoating composition comprising a binder of an epoxy-amine adduct, a blocked polyisocyanate crosslinking agent and an organic or inorganic acid as the neutralizing agent for the epoxy-amine adduct; wherein the improvement is the incorporation of a blocked polyisocyanate crosslinking agent that has at least one isocyanate group blocked with a hydroxy-functional cyclic carbonate compound.

2. The improved electrocoating composition of claim 1 in which the blocked polyisocyanate crosslinking agent is fully blocked with a hydroxy-functional cyclic carbonate compound.

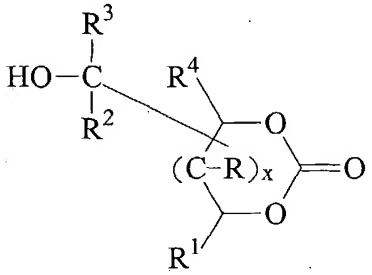
3. The improved electrocoating composition of claim 1 in which the blocked polyisocyanate has on an average basis only one isocyanate group blocked with a hydroxy-functional cyclic carbonate compound.

4. The improved electrocoating composition of claim 3 in which the remaining isocyanate groups are blocked with saturated alkyl alcohols, ether alcohols, oximes or amides.

5. The improved electrocoating composition of claim 1 in which the blocked polyisocyanate crosslinking agent is partially blocked with a hydroxy functional cyclic carbonate compound, with the remaining isocyanate groups being blocked with blocking agents selected from the group consisting of saturated alkyl alcohols, ether alcohols, oximes and amides.

6. The improved electrocoating composition of claim 1 in which the epoxy-amine adduct contains amines selected from the group consisting of primary amines, secondary amines and ketimines and mixtures thereof

7. The improved electrocoating composition of claim 1 in which the hydroxy functional cyclic carbonate blocking agent has the general formula



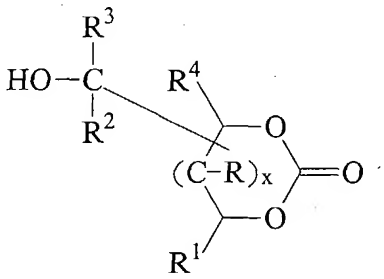
where R, R^1, R^2, R^3 and R^4 are each independently selected from H or an alkyl group having 1-12 carbon atoms and x is 0-1.

8. The improved electrocoating composition of claim 1 in which the hydroxy functional cyclic carbonate blocking agent is glycerin carbonate.

9. The improved electrocoating composition of claim 1 in which the epoxy adduct comprises a polyepoxy hydroxy ether resin extended with a dihydric phenol and reacted with an amine and is neutralized with an organic or inorganic acid.

10. A blocked polyisocyanate crosslinking agent having at least one isocyanate group blocked with a hydroxy-functional cyclic carbonate monomer compound and the remaining isocyanate groups are blocked with an ether alcohol or an alkyl alcohol.

11. The blocked polyisocyanate crosslinking agent of claim 8 where R^1 is the radical of a cyclic carbonate having the general formula



where R, R^1, R^2, R^3 and R^4 are each independently selected from H or an alkyl group having 1-12 carbon atoms and x is 0-1.

12. An improved method of preparing a cathodic electrocoating composition comprising the following steps in any workable order:

preparing an epoxy amine adduct of an epoxy resin extended with a dihydric phenol and reacted with an amine;

preparing a blocked polyisocyanate crosslinking agent;

blending the epoxy amine adduct with the blocked polyisocyanate crosslinking agent;

neutralizing the epoxy amine adduct with an organic or inorganic acid to form an emulsion;

forming a pigment dispersion and blending the pigment dispersion with the neutralized emulsion;

wherein the improvement consist of using in step (b) a blocked polyisocyanate crosslinking agent having at least one isocyanate group blocked with a hydroxy functional cyclic carbonate compound.

13. A substrate electrcoated with the dried and cured composition of claim 1.

14. The coated substrate of claim 13, wherein the substrate is an auto body or auto part.